

**FIELD SAMPLING PLAN
FOR THE
SAUGET/E. ST. LOUIS RESIDENTIAL PCB/DIOXIN SAMPLING SITE
SAUGET, ST. CLAIR COUNTY, ILLINOIS**

Prepared for
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region V

Prepared by
WESTON SOLUTIONS, INC.
Region V Superfund Technical Assessment and Response Team

November 2, 2009

Approved by: _____ Date: _____
U.S. EPA Region V
On-Scene Coordinator

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CERCLA Site/Spill Identifier No.:	054V
Contractor Organization:	Weston Solutions, Inc.
Contract Name:	START III
Contract No.:	EP-S5-06-04
Technical Direction Document No.:	S05-0001-0910-032
Document Control No.:	827-4H-AFDL

ACRONYM LIST

bgs	Below Ground Surface
CFR	Code of Federal Regulation
COC	Chain of Custody
FSP	Field Sampling Plan
MS/MSD	Matrix Spike/ Matrix Spike Duplicate
OSC	On-Scene Coordinator
PCB	Polychlorinated biphenyl
PPE	Personal Protective Equipment
ppm	Part Per Million
ppt	Part per Trillion
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RSL	Regional Screening Levels for Chemical Contaminants at Superfund Sites
SOP	Standard Operating Procedure
START	Superfund Technical Assessment and Response Team
TCDD	Tetrachlorodibenzo-p-dioxin
U.S. EPA	United States Environmental Protection Agency
WESTON	Weston Solutions, Inc.

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1.0 Introduction

This Field Sampling Plan (FSP) identifies the data collection activities and associated quality assurance/quality control (QA/QC) measures specific to the Sauget/E. St. Louis Residential PCB/Dioxin Sampling Site (the Site) located in Sauget and East St. Louis, St. Clair County, Illinois. All data will be generated in accordance with the quality requirements described in the Weston Solutions, Inc. (WESTON) *Superfund Technical Assessment and Response Team (START) III Generic QAPP*, dated June 2006. The purpose of this FSP is to describe site-specific tasks that will be performed in support of the stated objectives. The FSP will reference back to the QAPP for generic tasks common to all data collection activities including routine procedures for sampling and analysis, sample documentation, equipment decontamination, sample handling, data management, data assessment and data review. Additional site-specific procedures and/or modifications to procedures described in the *START III Generic QAPP* are described in the following FSP elements.

This FSP is prepared, reviewed, and approved in accordance with the procedures detailed in the *START III Generic QAPP*. Any deviations or modifications to the approved FSP will be documented using **Table 1: FSP Revision Form**.

2.0 Project Management and FSP Distribution and Project Team Member List

Management of the Site will be as documented in the *START III Generic QAPP*. Refer to the *START III Generic QAPP* for an organizational chart, communication pathways, personnel responsibilities and qualifications, and special personnel training requirements.

The following personnel will be involved in planning and/or technical activities performed for this data collection activity. Each will receive a copy of the approved FSP. A copy of the FSP will also be retained in the Site file.

Personnel	Title	Organization	Phone Number	Email
Kevin Turner	OSC	U.S. EPA	312-919-0090	turner.kevin@epamail.epa.gov
Ben Maradkel	Project Manager	START	847-918-4084	ben.maradkel@westonsolutions.com
Tom Binz	Site Lead	START	314-531-0060	tbinz@pe-engrs.com
Jon Strobel	Sampler	START	314-531-0060	jstrobel@pe-engrs.com
Tonya Balla	Health and Safety	START	847-918-4094	t.balla@westonsolutions.com
Lisa Graczyk	Project Manager	START	312-424-3339	lgraczyk@dynamac.com

NOTES:

OSC – On-Scene Coordinator

QA – Quality Assurance

START – Superfund Technical Assessment and Response Team

TBD – To Be Determined

U.S. EPA – United States Environmental Protection Agency

3.0 Planning and Problem Definition

3.1 Problem Definition

The U.S. EPA recently became aware of a 1975 contamination study in residential areas surrounding the Solutia WG Krummrich facility in Sauget, Illinois. Fifteen surface soil samples were collected and six of these samples were greater than 1 part per million (ppm) polychlorinated biphenyls (PCB) which is the general cleanup standard for residential areas. The contamination study stated that "The distribution of all PCBs analyzed appears to be higher near the plant site and generally decreasing with distance from the site. There is some evidence that higher concentrations are present in the soils located to the southeast which corresponds with the predominant wind direction in this area." U.S. EPA has tasked Weston Solutions, Inc. (WESTON[®]) Superfund Technical Assessment and Response Team (START) with the collection of surface soil samples in the residential neighborhoods to determine if further action is required due to PCB and/or Dioxin/furan contamination in the soil.

3.2 Site History and Background

The Site is located in Sauget, St. Clair County, Illinois, and consists of residential areas surrounding the Solutia WG Krummrich facility (Figure 3-1). The Mississippi River is located approximately 0.75 mile west of the Site.

In the 1930's the Solutia WG Krummrich facility began producing PCBs and ceased in 1977. The PCB manufacturing area was dismantled in 1977. A waste incinerator operated from 1971 to 1977 in the central portion of the facility. The incinerator treated 151,000 tons of PCBs, chlorinated solvents, plasticizers, polar solvents, and chlorinated aromatics. Dioxins and furans are combustion products of PCBs and trichlorobenzenes and are therefore expected to be present at the former incinerator where combustion of dielectric fluids containing PCBs and trichlorobenzenes took place.

The Solutia WG Krummrich facility is surrounded by waste disposal areas that are subject to CERCLA actions which are also known as Sauget Area 1 and Sauget Area 2. Wastes generated at Solutia were historically disposed at the CERCLA Sites. Other nearby industrial plants are located in the area. At the Sauget Area 1 CERCLA Sites, PCBs were present in surface sediment in Dead Creek prior to recent removal actions, and in surface soil at Sites G, H, I, L, and N. PCBs were also found at elevated levels at some Sauget Area 2 disposal areas (i.e., Sites O, Q, R, and S) but they are distant from residential areas and are not considered in this sampling program.

3.3 Contaminants of Concern/Target Analytes

The main contaminants of concern at the Site are PCBs and dioxin/furans in soil.

4.0 Project Description and Schedule

START is to collect up to 35 surface soil samples (plus associated quality control samples) at approximately 32 residential properties, one commercial establishment, and two at Sauget Park. The samples are to be analyzed for PCB homologs (monochlorobiphenyl through decachlorobiphenyl) and dioxin/furans [World Health Organization (WHO) list].

The sampling will occur on November 4 through 6, 2009, and is expected to last three days.

A commercial laboratory will be utilized for analytical services. The WESTON START member on site will provide sample coordination including laboratory coordination and sample shipment. Sample labels and chain-of-custody (COC) paperwork will be generated by WESTON START. Samples will be packaged properly by WESTON START and shipped daily for next-day delivery. The turn-around time for the sample data will be three weeks. The samples will be reviewed and validated by a WESTON START chemist within two weeks of receipt of the final data package from the laboratory.

The sampling design is provided below in Section 6.0.

5.0 Project Quality Objectives

5.1 Project Objectives

The objective of sampling activities is to determine concentrations of PCBs and dioxin/furans in residential soil surrounding the Solutia facility require further remedial action.

5.2 Measurement and Performance Criteria

Generic measurement and performance criteria described in the *START III Generic QAPP* will be used to ensure that data are sufficiently sensitive, precise, accurate, and representative to support site decisions.

5.3 Data Quality Objectives

Data quality objectives address requirements that include when, where, and how to collect samples, the number of samples, and the limits on tolerable error rates. These steps should periodically be revisited as new information about a problem is learned.

The sampling results for total PCBs will be compared to the generic residential soil screening level of 1 ppm. Dioxin/furan results will be compared to the U.S. EPA "Regional Screening Levels for

Chemical Contaminants at Superfund Sites" (RSL) which is 4.5 parts per trillion (ppt) total toxic equivalency factor to 2,3,7,8- tetrachlorodibenzo-p-dioxin (TCDD).

6.0 Sampling Design

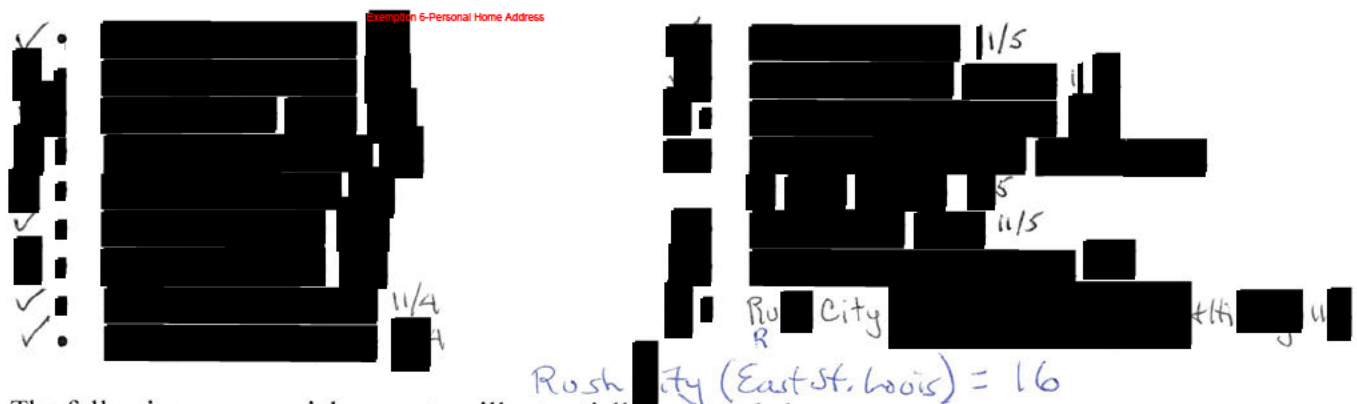
START will perform the Site activities detailed in the following subsections.

6.1 Sample Collection

Up to a total of 35 soil samples (plus field duplicate samples) will be collected during the site investigation. The number samples and analyses may be revised to remain within project budgets. The anticipated soil sampling locations are depicted on Figure 6-1. The residential addresses to be potentially sampled in Sauget, Illinois are as follows:



The residential addresses to be potentially sampled in East St. Louis are:



The following commercial property will potentially be sampled:

NS • Ex.6-Personal Home Addresses

11/4

In addition, two soil samples will be collected at Sauget Park located southeast of the intersection of Falling Springs Road and Little Avenue.

One composite surface soil sample [0 to 6 inches below ground surface (bgs)] will be collected at each residential/commercial property and two composite samples will be collected at Sauget Park. The number of grab samples collected for each composite sample will depend on the property layout. The field team (WESTON START and U.S. EPA) will devise a sampling scheme at each property based on the site layout and available un-paved space. Additionally, any information received by property owners will be utilized in determining sampling locations (for instance, if an area was recently filled for some reason). Utilizing a stainless steel trowel, plastic scoop, or auger, a grab soil sample will be collected for each grab sample to make up the composite. The grab samples will be placed in a disposable foil pan and mixed thoroughly. The appropriate soil jars will then be filled directly from the foil pan. Fresh sampling gloves will be donned at each property prior to sampling. All samples locations at each property will be logged in a field logbook.

For Sauget Park, the park will be divided into two distinct sampling areas. A composite surface soil sample (0 to 6 inches bgs) will be collected in each distinct sampling area using the same sampling scheme listed above for other properties.

All soil samples will be analyzed for PCBs and dioxin/furans. Requirements for the sample container, volume, preservation, and QC samples are presented in Table 2: Sampling and Analysis Summary.

6.2 Sample Numbering System

All samples for analysis, including QC samples, will be given a unique sample number. The sample numbers will be recorded in the field logbook, the COC paperwork, and the shipment documents.

START will assign each sample a unique project sample number. The project sample number highlights the suspected contaminated area and location, and will be used for documentation purposes in field logbooks, as well as for presentation of the analytical data in memoranda and reports. The project samples will be identified using the following format:

SE-SSXX-mmddyy

Where:

“SS” designates the sample is from the Sauget/E. St. Louis Residential PCB/Dioxin Sampling Site

“SS” indicates that the medium being sampled is surface soil

XX is the sequential sample number

mmddyy is the date

Field duplicate samples will be designated with a “D” suffix. Examples of the sample identifications for the Site are as follows:

- SE-SS15-110509: Fifteenth surface soil sample collected; sample collection date November 5, 2009
- SE-SS10-110409D: Field duplicate of tenth surface soil sample collected; sample collection date November 4, 2009

6.3 Management of Investigation-Derived Wastes

For purposes of this FSP, investigation-derived wastes are defined as any byproduct of the field activities that is suspected or known to be contaminated with hazardous substances. The performance of field activities will produce spent Personal Protective Equipment (PPE) and used sampling supplies. All waste generated during the site assessment will be bagged and disposed of as general refuse with U.S. EPA approval. If required, disposal arrangements will be executed in accordance with appropriate local, state, or federal regulations. START will refer to the U.S. EPA's *Management of Investigation-Derived Wastes During Site Inspections* (U.S. EPA, 1991) guidance on off-site disposal policies, if this action is deemed necessary.

7.0 Sampling Procedures

7.1 Sampling Standard Operating Procedures

The START team will follow generally WESTON *Standard Operating Procedure (SOP) 302, Surface Soil Sampling* with necessary modifications for the sampling described in Section 6.0.

7.2 Decontamination Procedures

General decontamination procedures are described in Section B.2 of the *START III Generic QAPP*. The following standard decontamination protocols will be used:

- All disposable sampling supplies and PPE will be bagged and disposed of as general refuse.
- Every effort will be made to use dedicated sampling supplies will be dedicated. However if non-dedicated equipment is used, such as sampling trowels or mixing bowls, then these will be washed in an alconox/distilled water solution and rinsed with distilled water.

8.0 Sample Handling, Tracking, and Custody Procedures

All samples will be identified, handled, shipped, tracked, and maintained under COC, in accordance with *START III Generic QAPP* Section B.3.

9.0 Field Analytical Methods and Procedures

9.1 Field Analytical Methods and Standard Operating Procedures

Field analytical methods will not be employed during the air sampling activities.

9.2 Field Testing Laboratory

A field testing laboratory will not be used during the air sampling events at the Site.

9.3 Screening/Confirmatory Analyses

Screening or confirmatory analyses will not be conducted at the site.

10.0 Fixed Laboratory Analytical Methods and Procedures

Commercial laboratories will be utilized for sample analyses. The laboratories selected for the project are:

Columbia Analytical Services (PCB homolog analyses)
1 Mustard Street, Suite 250
Rochester, New York 14609
585-288-5380
Attn: Michael Perry

Columbia Analytical Services (dioxin/furan analyses)
10655 Richmond Avenue, Suite 130A,
Houston, Texas 77042
281-994-2957
Attn: Jane Freemyer

CAS in Houston, Texas, will perform the dioxin analyses. CAS in Rochester, New York, will perform all other analyses. The laboratory analytical methods and procedures are detailed in Table 2 of this FSP.

11.0 Quality Control Activities

11.1 Field Quality Control

Field QC samples will be collected and analyzed for this project at the frequency described in *START III Generic QAPP*, Table 4. The number of QC samples collected for each analytical parameter and concentration level are listed in **Table 2: Sampling and Analysis Summary**.

11.2 Analytical Quality Control

QC for analytical procedures will be performed at the frequency described in *START III Generic QAPP*, Tables 5 and 6. In addition, method-specific QC requirements will be used to ensure data quality.

11.3 Performance Evaluation Samples

Performance Evaluation Samples will not be collected during this sampling event.

12.0 Documentation, Records, and Data Management

Documentation, record keeping, and data management activities will be conducted in accordance with the *START III Generic QAPP*, Section B.10.

13.0 Quality Assurance Assessment and Corrective Actions

No field audits will be conducted due to the short amount of time that sampling will be conducted at the site.

14.0 Reports to Management

Reports to management will be written and distributed in accordance with the *START III Generic QAPP*, Section C.

15.0 Steps 1, 2 and 3: Data Review Requirements and Procedures

Step 1: Data collection activities, including sample collection and data generation, will be verified in accordance with the *START III Generic QAPP*, Section D.

Step 2: Data will be validated in accordance with the *START III Generic QAPP*, Section D.
A START or ERRS chemist will validate the data.

Step 3: Data will be reviewed for usability in accordance with the *START III Generic QAPP*, Section D.

TABLES

File: D:\Sauget Residential\mxd\3-1_Site_Location.mxd, 30-Oct-09 14:03, Wojdak



0 2,000 Feet



Figure 3-1
Site Location Map
Sauget/E. St. Louis Residential
PCB/Dioxin Site
St Clair County, Illinois

Exemption 6-Personal Home Addresses

Table 1
FSP Revision Form

Site: Sauget/E. St. Louis Residential PCB/Dioxin Sampling Site, Sauget, St. Clair County, Illinois

OSC: Kevin Turner

TDD: S05-0008-0910-032

Date	Rev. No.	Proposed Change to FSP/QAPP	Reason for Change of Scope/Procedures	FSP Section Superseded	Requested By	Approved By

Table 2
Sampling and Analysis Summary

Site: Sauget/E. St. Louis Residential PCB/Dioxin Sampling Site, Sauget, St. Clair County, Illinois

OSC: Kevin Turner

TDD: S05-0008-0910-032

Matrix	Analytical Parameter	Analytical Method (U.S. EPA)	Containers (Numbers, Size, and Type)	Preservation Requirements	Number of Sampling Locations	Number of Field Duplicates	Number of MS/ MSDs	Number of Rinsate Blanks and/or VOC Trip Blanks	Total Number of Samples to Lab ¹	Holding Time Requirements
Soil	PCBs (10 homologs)	680	One 8-ounce glass jar	Cool to 4°C	35	2	2	0	37	14 days to extraction; 40 days to analysis following extraction
Soil	Dioxin/ furans (full WHO list with TEQ calculations)	8290A	One 8-ounce glass jar	Cool to 4°C	35	2	2	0	37	30 days to extraction; 45 days to analysis following extraction

Notes:

¹ Total number of samples to the laboratory does not include MS/MSD samples.

°C – Degrees Celsius

EPA – United States Environmental Protection Agency

MS/MSD – Matrix spike/ matrix spike duplicate

No. – Number

PCB – Polychlorinated biphenyl

TEQ – Toxicity Equivalent to 2,3,7,8-TCDD

FIGURES